



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,846	03/30/2004	Toshihiro Suzuki	1324.70182	3124
24978	7590	01/19/2006	[REDACTED]	EXAMINER
GREER, BURNS & CRAIN 300 S WACKER DR 25TH FLOOR CHICAGO, IL 60606			[REDACTED]	MAKIYA, DAVID J
			[REDACTED]	ART UNIT
				PAPER NUMBER
				2875

DATE MAILED: 01/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/812,846	SUZUKI, TOSHIHIRO	
	Examiner David J. Makiya	Art Unit 2875	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 12 December 2005.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-8 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-5, 7 and 8 is/are rejected.
 7) Claim(s) 6 is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on 12 December 2005 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

The specification is objected to because the applicant fails to teach why “it is assumed that an average sum of amounts of light calculated from a sum of amounts of light calculated from a sum of amounts of light of the single color light-emitting elements is 100%” nor does it teach how “a sum of amounts of light of the respective single color light-emitting elements at a center of gravity of the delta shape and a center of gravity of a diamond shape formed by two delta shapes is between 75% and 125%” (pages 7, 27-37). The applicant is required (MPEP § 608.01(g)) to teach in a detailed description of the invention where particularly complicated subject matter is involved or where the elements, compounds, or processes may not be commonly or widely known in the field, the specification should refer to another patent or readily available publication that adequately describes the subject matter. In this case, it would not be obvious to one of ordinary skill in the art how or why the applicant calculated and collected these numbers.

Claim Objections

Claim 6 is objected to because of the phrase “a row interval, a column interval, and an arrangement angle of the light-emitting element groups are adjusted such that, when it is assumed that an average sum of amounts of light calculated from a sum of amounts of light of the single color light-emitting elements is 100%, a sum of amounts of light of the respective single color light-emitting elements at a center of gravity of the delta shape and a center of gravity of a diamond shape formed by two delta shapes is between 75% and 125%.” Because of

the use of “assumed,” the claim fails to distinctly limit the device and is therefore considered indefinite. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over the applicant's admitted prior art in view of Kanatsu et al. (US Patent 6,867,825).

With respect to claims 1 and 8, the applicant's admitted prior art teaches a liquid crystal display panel 13 with a surface lighting device (Figures 25 and 26) comprising a surface light source in which linear light sources (7, 9, and 17) having light-emitting elements, which correspond to respective colors among combinations of plural colors at least including three primary colors of light, arranged in series are arranged in a predetermined order, a reflection plate 2 which is laid so as to fill spaces among the light-emitting elements constituting the linear light sources, a substrate 4 on which the surface light source and the reflection plate are set, and a diffusion plate 1 which is located above the surface light source and the reflection plate, but fails to teach the surface lighting device wherein non-light-emitting portions of the light emitting elements are covered by the reflection plate, with the reflection plate positioned between the non-light-emitting portion of the light-emitting elements and the diffusion plate. Kanatsu et al. teaches a surface lighting device wherein non-light-emitting portions 9 of light emitting elements 10 are covered by a reflection plate 12b positioned between the non-light-emitting portion of the

light-emitting elements and a diffusion plate 5 (Figure 2). It would have been obvious to one of ordinary skill in the art at the time of the invention to cover the non-light-emitting portions of the light-emitting elements of the applicant's admitted prior art because using a reflector such as that of Kanatsu et al. would increase the overall light intensity.

With respect to claim 2, the applicant's admitted prior art teaches a surface lighting device comprising a surface light source in which linear light sources having light-emitting elements, which correspond to respective colors among combinations of plural colors at least including three primary colors of light, arranged in series are arranged in a predetermined order and at a fixed interval, a first reflection plate 2 which is laid so as to fill spaces among the light-emitting elements constituting the linear light sources, a substrate on which the surface light source and the first reflection plate are set, and a diffusion plate which is located above the surface light source and the first reflection plate. However, the applicant's admitted prior art fails to teach a second reflection plate having through holes in which light-emitting portions of the light-emitting elements can be fit, a substrate on which the second reflection plate is set, and a diffusion plate located above the second reflection plate, wherein non-light-emitting portions of light-emitting elements are covered by the second reflection plate, with the second reflection plate being positioned between the non-light-emitting portions of the light-emitting elements and the diffusion plate. Kanatsu et al. teaches a surface light source 10, a first reflection plate 8, a second reflection plate 12b, a substrate 6 on which the surface light source, the first reflection plate, and the second reflection plate are set, a diffusion plate 5 which is located above the surface light source, the first reflection plate, and the second reflection plate, wherein non-light-emitting portions of the light-emitting elements are covered by the second reflection plate, with

the second reflection plate being positioned between the non-light-emitting portions of the light-emitting elements and the diffusion plate. It would have been obvious to one of ordinary skill in the art at the time of the invention to cover the non-light-emitting portions of the light-emitting elements because using a second reflector would increase the overall light intensity.

Claims 3-5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over the applicant's admitted prior art in view of Ohtake et al. (US Patent 5,384,658).

With respect to claims 3 and 5, the applicant's admitted prior art teaches a surface lighting device comprising a surface light source in which linear light sources having light-emitting elements, which correspond to respective colors among combinations of plural colors including at least three primary colors of light, arranged in series are arranged in a predetermined order, a reflection plate which is laid so as to fill spaces among the light-emitting elements constituting the linear light sources, a substrate on which the surface light source and the reflection plate are set, and a diffusion plate which is located above the surface light source and the reflection plate. However, the applicant's admitted prior art fails to teach the substrate having linear projected portions nor does it teach an irradiation angle. Ohtake et al. teaches a surface lighting device comprising a substrate which has linear projected portions arranged at a fixed interval wherein each of the linear light sources is arranged on only one slope of the linear projected portions arranged at the fixed interval on the substrate (see Figure A), and an irradiation angle, at which an amount of light of the light-emitting elements corresponding to at least one color among the plural colors is maximized according to the interval of the linear projected portions and an interval between the diffusion plate and substrate, is set according to an

angle of the slopes of the linear projected portions (Figure A). Because the references teach the structure of the claimed surface lighting device, the references would also teach that the interval L, the interval H, and the irradiation angle such that a relation of $L \leq 2 \times H \times \tan(\text{irradiation angle at which an amount of light of the linear light sources is maximized})$ is satisfied. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device with the teachings of Otake et al. because the linear projected portions would increase the light intensity by adjusting the irradiation angle.

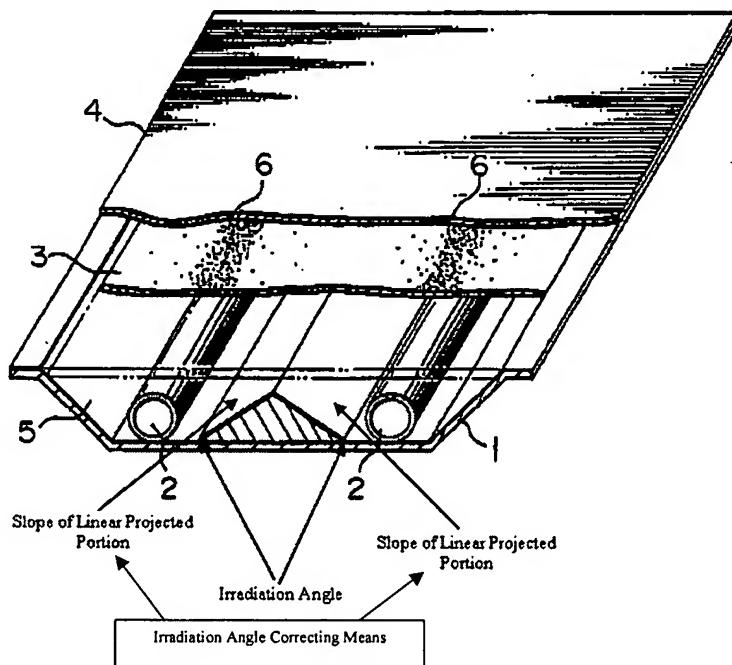


Figure A: Otake et al.: Irradiation Angle and Linear Projected Portions

With respect to claims 4 and 7, the applicant's admitted prior art teaches a surface lighting device comprising a surface light source in which linear light sources having light-emitting elements, which correspond to respective colors among combinations of plural colors at least including three primary colors of light, arranged in series to be contiguous with each other and are arranged in a predetermined order and at a fixed interval, a reflection plate which is laid

so as to fill spaces among the light-emitting elements constituting the linear light sources, a substrate on which the linear light sources and the reflection plate are set, and a diffusion plate which is located above the linear light sources and the reflection plate, the linear light sources are arranged in plural columns to form a surface light source. However, the applicant's admitted prior art fails to teach a light irradiation angle nor does it teach light irradiation angle correcting means. Otake et al. teaches an irradiation angle and a light irradiation angle correcting means on the light-emitting portions of the light-emitting elements, wherein an irradiation angle, at which an amount of light is maximized, is set by the light irradiation angle correcting means on the light-emitting portion of the linear light sources corresponding to at least one color among the plural colors according to the interval of the linear light sources and an interval between the diffusion plate and the substrate. Otake et al. further teaches a maximum irradiation angle of the light-emitting elements is corrected such that a point where maximum irradiation direction of the light-emitting elements and the diffusion plate cross with each other goes beyond a middle point of the linear light source adjacent to the linear light source of attention (Figure A). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device to include an irradiation angle correcting means on the light-emitting portion of the linear light source because it would increase the light intensity by adjusting the irradiation angle.

Allowable Subject Matter

Claim 6 is allowable if rewritten to overcome the claim objection.

The following is an examiner's statement of reasons for allowance: The prior art fails to teach or suggest "the light-emitting element groups are arranged to be deviated every other column or row such that a positional relation among the light-emitting element groups is a delta

shape.” The most pertinent art teaches light-emitting element groups deviated every other column or row, but is found to be in a rectangular shape. While any three groupings make up a triangular shape, they are not necessarily equilateral triangles, which is equivalent to the claimed delta shape.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David J. Makiya whose telephone number is (571) 272-2273. The examiner can normally be reached on Monday-Friday 7:30am - 4:00pm (ET).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Renee Luebke can be reached on (571) 272-2009. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DJM 01/12/2006



RENEE LUEBKE
PRIMARY EXAMINER